Functions
L-WEB, L-STUDIO
L-ROC
L-INX
L-IOB
Gateways
LPAD-7, L-VIS, L-STAT
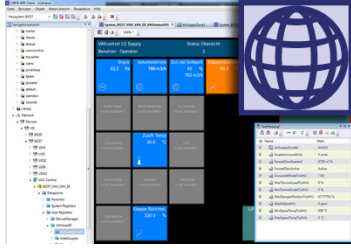L-DALI
Routers, NIC
Interfaces
Accessories

Integrated Building Management System
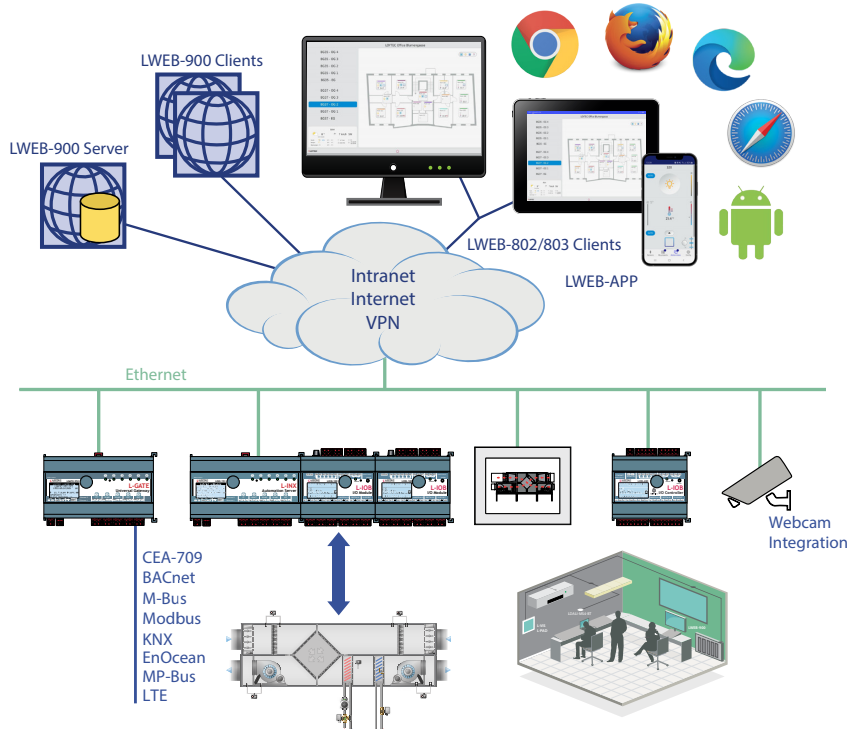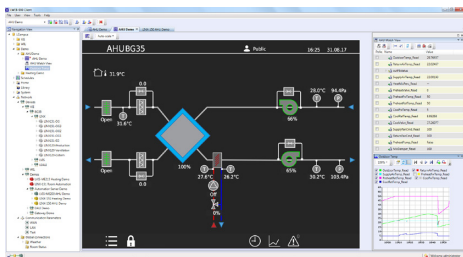
LWEB-900

Datasheet #89016123

The integrated building management software LWEB-900 provides a user interface to manage and operate a LOYTEC building management system. LWEB-900 is a highly flexible and scalable solution which accompanies you from installation and configuration of LOYTEC devices (L-INX Automation Servers, L-IOB I/O Modules and Controllers with IP connectivity, L-ROC Room Controllers, L-GATE Gateways, L-PAD / L-VIS Touch Panels, L-DALI Controllers), all the way to daily operation of the facilities. Thus, a common user interface for the building automation system is available at all phases of the project.

LWEB-900 uses a client–server model consisting of the LWEB-900 Server and one or multiple LWEB-900 Clients. The LWEB-900 Server manages and stores system and operating parameters, historic data, access rights, and device configurations in an SQL data base. It exchanges real time data with distributed autonomous LOYTEC devices via web services independently of the underlying field bus technology (CEA-709, BACnet, DALI, M-Bus, Modbus, KNX, etc.).

The LWEB-900 Client is the user interface of the building management system. The client can be installed on the same PC as the server or on a remote PC. The use of web services to communicate between clients and server ensures that remote access is easily possible across firewalls and NAT routers. In this way, Intranet and Internet can be used to build distributed building automation systems. In addition, differences between the various field bus technologies are compensated and the user is presented with a consolidated view of the separate communication systems.

To check the status of the buildings technical equipment, there is no need to install the LWEB-900 Client. If you have an IP connection to the LWEB-900 Server, you can use a standard web browser to operate and monitor the building automation system. It makes no difference, whether a smart phone, tablet, or PC is used.

Integrated Building Management System

LWEB-900

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Visualize and Operate

The LWEB-900 Client adapts to the needs of the user. A large number of different views is available to represent data from the building in an intuitive way. For example, graphical views can be arranged in a perspective together with an alarm view, navigation view, and data point watch view.

To operate and monitor the building technical equipment a standard web browser can be used. In this way it is possible to quickly check the status of the building automation system while travelling. It makes no difference, whether a smart phone, tablet, or PC is used. Compared to the LWEB-900 Client, the functionality of the web application is limited to the daily operation of the building and does not include the functionality to install and configure the system.

Graphical View

In LWEB-900, all areas of a building can be visualized and operated using graphical views. Each graphical view can consist of a large number of dynamic display elements which reflect the current status of the facilities in real-time. These display elements also include complex elements like alarms, trend logs, and schedules. The configuration software to design the graphical representation of the installation is built directly into LWEB-900. Basic functions and attractive pages can be created in no time without any know-how in HTML, Java, etc. Dynamic information is shown in the form of numeric values, text, changing icons, bar graphs, trend logs, alarm and event lists, or schedule controls. Pixel graphics in all common file formats (GIF, JPG, BMP, TIFF, PNG, MNG, ICO), vector graphics (SVG) as well as alpha blending are supported.
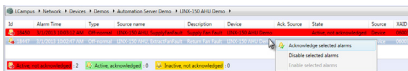
Alarming

With LWEB-900, alarms from different sources can be visualized and managed in a uniform manner. It makes no difference whether an alarm is generated by a L-INX Automation Server to report that a V-belt is torn, by a DALI light controller to report that the emergency light test fails, or by an L-GATE device to report an alarm from a 3rd party system. In LWEB-900, these alarms are presented in a common way which enables the user to maintain an overview. The user can acknowledge or disable alarms. When an alarm occurs, one or multiple receivers can be notified via e-mail or SMS. If the alarm is not acknowledged within a configurable amount of time, an alternative action can be triggered.
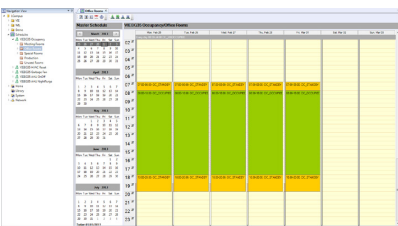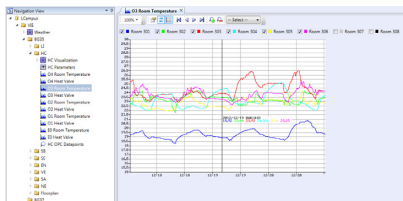
Scheduling

Schedules can either be executed in LOYTEC devices or directly in the LWEB-900 Server. To optimize the system, the scheduler should be at the same location as the corresponding control logic. For example, an occupancy scheduler should be executed by the L-INX automation controller which primarily uses this information, whereas a scheduler determining which people are notified about alarms should be executed in the LWEB-900 Server. LWEB-900 offers the unique possibility of organizing schedules executed on different devices in a hierarchical way and configuring them efficiently. The user interface is designed for non-technical users and is similar to calendar functions of common office applications. Schedulers are organized in a tree structure. Entries on the highest hierarchical level have an impact on all schedulers. Entries on a lower hierarchical level affect only the schedulers below that level. Local changes on the device are identified and can either be accepted or rejected. After the schedule hierarchy has been defined, LWEB-900 calculates the resulting configurations and if the scheduler is executed decentralized in a LOYTEC device, it downloads them to the corresponding device.

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LWEB-900

Trending

LOYTEC devices can record the values of data points over time. However, the memory available on a device is limited. LWEB-900 overcomes this restriction by reading out the trend data from the devices periodically and storing everything in the database. A user can also create ad-hoc trend logs directly in LWEB-900. This is the fastest way to create a trend log. One simply selects a data point and activates trending using the context menu. LWEB-900 periodically polls the data point value from the device and stores the value in the database. If the LWEB-900 Server cannot access the LOYTEC device directly via IP, an alternative communication method is available: the device can automatically e-mail trend data to the server. Trend logs can be viewed either as tables or as charts. Especially for trend charts, a large number of customization options are available. In addition, LWEB-900 allows exporting trend data as CSV files.


Event Log

All events are logged by LWEB-900 in the database. Events include alarms, alarm acknowledgements, log-in and log-out of users, change of operational parameter, change of device configuration, system messages, etc. The event log view offers a large variety of filters to efficiently analyze all activities in LWEB-900.

Parameter View

The parameter view allows configuring operational parameters, which are distributed over multiple devices, efficiently. For example, parameters for room temperature control, light control, or sunblind control can be organized in different parameter views. Each parameter view is a matrix where each cell represents a parameter. Parameters can be organized freely in the matrix depending on space layout and function. In this way, it is possible to e.g. adjust the running periods of sunblinds across many rooms with a few mouse clicks and write the new values reliably into the corresponding automation devices. The parameter view also allows to display real-time values.
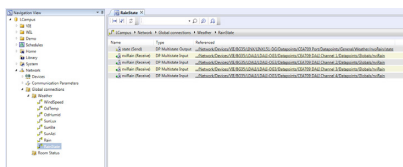
Global Connections

With LWEB-900 it is easy to connect data points of different LOYTEC devices via Ethernet/IP. For this purpose, a global connection can simply be created and drag and drop can be used to add input and output data points. It makes no difference whether the data points represent physical I/Os of L-IOB devices or data from field bus systems (CEA-709, BACnet, DALI, M-Bus, Modbus, KNX, etc.). LWEB-900 configures all devices which are part of the global connection accordingly. After the connection has been configured, the devices exchange data directly over the IP Network (without LWEB-900).


Device Manager

LWEB-900 gives a clear overview of the status of all devices and provides detailed information for each device (e.g. device type, name, IP address, firmware version, configuration file, etc.). A firmware update can be performed for individual devices or groups of devices. A backup feature ensures a regular backup of all relevant device configurations. If a defective device needs to be replaced, the configuration can be easily restored. Depending on the device hardware, the restore operation can be initiated either from the LCD UI of the device or from the LWEB-900 Client.

Device Configuration

LWEB-900 manages and configures all LOYTEC devices based on a central database. The required device configuration software can be opened directly in LWEB-900 and the configuration files are stored in the data base.
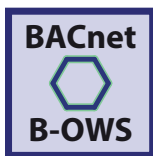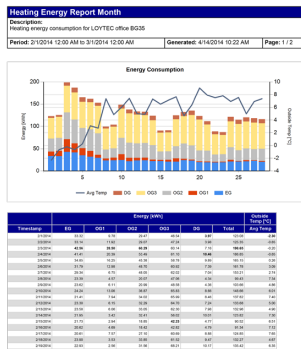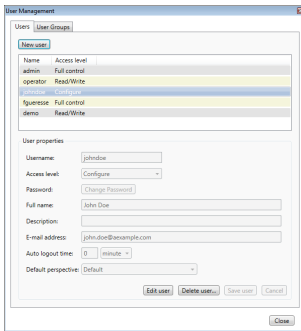
User Management

LWEB-900 provides a separate work environment for each user. A user has to log on to the system and is presented with a perspective tailored to his individual requirements. A perspective defines which windows are open and how they are arranged. In this way, a user can define separate perspectives which are optimized for different tasks and quickly switch between them.

LWEB-900 uses access control lists to define which operations a user can perform on a certain object (e.g. folder, data point, graphical view, parameter view, trend chart). To speed up the access right configuration, access control lists can be inherited from parent to child objects.

Reporting

LWEB-900 can create reports based on trend logs. Reports can be used, for example, to document the energy consumption in a building. The generation of a report can be triggered in one of the following ways:

- Periodically: Reports can be generated daily, weekly, monthly, or yearly.
- Event: The change of a data point value can trigger a report.
- Manually: A report can be triggered manually by the user.

Reports can be generated in PDF, Excel, or Word format. They can be automatically distributed via e-mail.

BACnet Operator Workstation B-OWS

A BACnet Operator Workstation is designed to provide an operator with all the information and editing ability needed for managing a system on a daily basis. In addition to viewing and editing selected BACnet object, an Operator Workstation can display trends, schedules, and other specialized objects. It can also display reports and graphics. A BACnet Operator Workstation will notify the operator that an alarm has occurred, lets the operator acknowledge the alarm, provides a summary of alarms, and allows to adjust the alarm thresholds of analog objects.

Watch View

The watch view allows observing data point values in real time. Depending on the data point types, the values can also be changed and easily edited within the watch view. You are able to see what is actually going on in the network.

AKS – Identification Keys

Each data point is uniquely identified by its name and path. With LWEB-900, you can define your own identification key schema and assign identification keys (IK) to each data point. The IK schema can be exported and imported into other LWEB-900 projects.
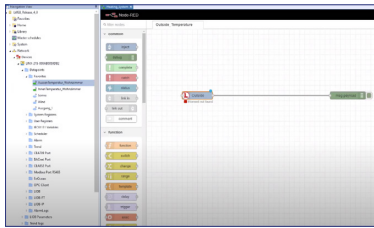
Integration of Web Cams

LWEB-900 can integrate web cams supporting the ONVIF standard. The local subnet scanning feature detects cameras automatically and reduces configuration effort significantly. The live image of a camera can be added to graphical views. LWEB-900 automatically detects the capabilities of a camera and maps events (e.g. motion detection, people counter information) and commands (e.g. PTZ control) to data points. LWEB-900 does not record videos itself but can command a camera to start recording if an alarm occurs.

Multi-Site

This feature allows accessing multiple LWEB-900 Servers located at different sites with a single LWEB-900 Client. It is possible to create a common graphical view showing data from the different servers. Devices, alarms, and users can be managed across the sites. To enable this feature the LWEB-900-MS license needs to be installed on each LWEB-900 Server.

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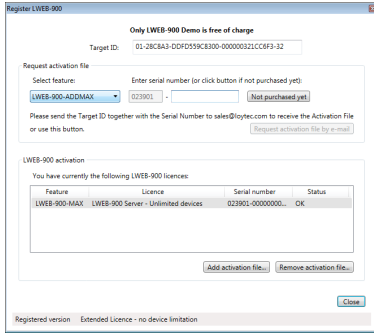
LWEB-900

Licensing

The licensing is based on the number of devices connected to an LWEB-900 Server. The base license includes 10 LOYTEC device licenses. To extend the number of devices, add-on licenses for 10 devices are available. An add-on license for an unlimited number of devices is available as well. For customers who know right from the beginning that they need a license for an unlimited number of devices, such license is offered as well. The maximum number of devices that can be integrated on an LWEB-900 Server depends on the PC and the database resources provided. LOYTEC L-IP Router and L-IOB Modules connected to L-INX Automation Servers do not consume a device license. A LWEB-900 demo license with 30 days runtime is provided, including 10 device licenses.

The license also restricts the maximum number of concurrent LWEB-900 Clients and LWEB-802/803 Clients (access for end user via web browser or Windows application) and LWEB-APP Clients (access for end user via LOYTEC Android app or LOYTEC iOS/iPadOS app). The standard license includes 5 LWEB-900 Clients and 20 LWEB-802/LWEB-803/LWEB-APP Clients.

The VPN feature requires two licenses: The VPN base license enables the VPN function. Each active LWEB-900 project for which VPN is enabled requires a separate VPN base license license. The VPN maintenance license is required to add devices to the VPN using the VPN web services. The VPN maintenance license is valid for all projects on the server but is limited to the duration of one year. The VPN will continue to operate after the VPN maintenance license has expired.
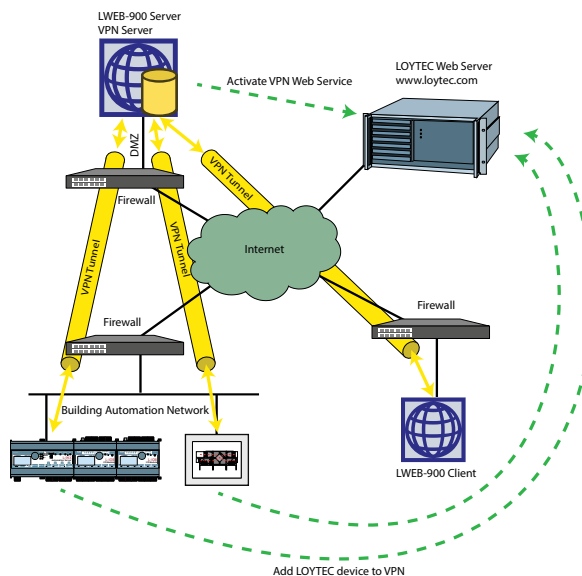
Scripting

The functionality of the LWEB-900 Server can be extended with custom Node.js scripts. This feature allows connecting the system to almost any cloud service, either for uploading historical data to analytics services, delivering alarm messages to alarm processing services or operating parts of the control system over a cloud service (e.g., scheduling based on Web calendars or booking systems). Processing Internet information such as weather data in forecast-based control is also possible. Finally, the JavaScript kernel also allows implementing serial protocols to non-standard equipment in primary plant control.

LWEB-900 also integrates the Node-RED™ run-time. Node-RED™ is a flow-based development tool for visual programming.

VPN

LWEB-900 provides very quick and easy configuration of a virtual private network (VPN) consisting of LOYTEC devices, LWEB-900 clients and any other devices supporting the OpenVPN protocol. Each LOYTEC device establishes a VPN tunnel

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to the VPN server configured by LWEB-900. PCs running the LWEB-900 client or mobile devices can join to the VPN to have direct access to LOYTEC devices. It is possible to create multiple projects in one LWEB-900 Server. For each project, the VPN function can be enabled separately creating distinct VPN instances.

Conclusion

Together with LOYTEC devices, LWEB-900 is a seamless and comprehensive solution for building automation. Instead of separate tools and project files for different devices, LWEB-900 provides a common user interface for configuring and operating the complete system. The consistent use of web services for data communication allows controlling LWEB-900 from remote, no matter whether there are firewalls and NAT routers or not. In this way, end users and service technicians can monitor, operate, and configure the buildings' technical equipment from remote using standard IP technology.

Features

- Displays customized graphical pages with dynamic content
- Multi-browser support (web access)
- Alarming from different sources, and time- and event-based forwarding via e-mail to several recipients
- Hierarchical organization of calendar and scheduler parameters across multiple devices and within the LWEB-900 Server
- Presentation of trend data in the form of charts or tables
- Structured representation and efficient adaptation of system and operating parameters (Parameter View)
- Fast and system-wide access to real time data
- Supports Global Connections
- SQL data base server
- Manages multiple users and access rights via ACL
- Reporting module to generate reports from trend logs using templates
- Configuration software for LOYTEC hardware can be directly started within the LWEB-900 user interface

- Automatic, periodic device backup and easy recovery of the device configuration for a device replacement
- Checks if firmware updates are available (Internet connection required) and displays devices with outdated firmware
- Download of the latest firmware for a defined group of devices
- Uses web services for communication (OPC XML-DA, SOAP/XML)
- Easy communication across firewalls and NAT routers on the Intranet and Internet
- Import/Export of trend logs and identification keys schema
- BACnet Operator Workstation (B-OWS)
- Watch View allows observing data points in real time
- Integration of Web cams
- Multi-site support
- VPN support
- Scripting

Specifications	
Compatible with	L-INX Automation Server, L-ROC Room Controller, L-GATE Gateway, L-DALI Controller, L-VIS / L-PAD Touch Panels, L-IOB I/O Controller, L-IP Router
Operating system	Windows 10, Windows 11, Windows Server 2012, Windows Server 2016, Windows Server 2019, Windows Server 2022
Hardware requirements	LWEB-900 server: PC with at least 2 GHz, 32- or 64-bit processor, 4 GB RAM, 50 GB free hard disk space, Ethernet connection LWEB-900 client: PC with at least 2 GHz, 32- or 64-bit processor, 2 GB RAM, 1 GB free hard disk space, Ethernet connection, screen resolution 1280x720

Resource Limits	
Recommended limit for SQLite	10 GBytes, 1 record =100 bytes -> 100.000.000 records
Max. number of devices	1000
Max. number of multi-sites	50

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LWEB-900

Order number	Product description
LWEB-900	Building Management Software for 10 devices (L-IP Router and L-IOB I/O Modules connected as extension to the L-INX Automation Servers, L-ROC Room Controllers and L-IOB I/O Controllers do not consume a device license), licenses for 5 LWEB-900 Clients and 20 LWEB-80x Clients are included
LWEB-900-ADD-10	Add-on license for 10 additional devices
LWEB-900-ADD-MAX	Add-on license for max. 1000 devices
LWEB-900-MAX	Building Management Software for an unlimited number of devices, licenses for 5 LWEB-900 Clients and 20 LWEB-80x Clients are included
LWEB-900-CL-5	Add-on license for additional 5 LWEB-900 Clients
LWEB-900-80x-50	Add-on license for additional 50 LWEB-80x Clients
LWEB-900-80x-100	Add-on license for additional 100 LWEB-80x Clients
LWEB-900-80x-MAX	Add-on license for an unlimited number of LWEB-80x Clients
LWEB-900-MS	Add-on license to enable multi-site support
LWEB-900-VPN-BASE	Add-on license to enable VPN support in LWEB-900 for one project, includes LWEB-900-VPN-MNT for 1 year
LWEB-900-VPN-MNT	Add-on license to add/remove VPN clients in LWEB-900 for all projects. Valid for 1 year